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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,076	07/21/2003	Vladimir Mancevski	500929.000017B	5156
27644 7590 07/24/2007 THOMPSON & KNIGHT L.L.P. PATENT PROSECUTION DEPARTMENT 98 SAN JACINTO BLVD., SUITE 1900 AUSTIN, TX 78701			EXAMINER MCCRACKEN, DANIEL	
			ART UNIT 1754	PAPER NUMBER
			MAIL DATE 07/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/624,076	Applicant(s) MANCEVSKI, VLADIMIR	
	Examiner Daniel C. McCracken	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Citation to the Specification will be in the following format (S. # : ¶) where # denotes the page number and ¶ denotes the paragraph number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

Remarks

Dual-correspondence is not permitted; if applicant is prosecuting the application through a registered practitioner, they may not communicate directly with PTO personnel. If this application is being prosecuted pro se, then a withdrawal of Power of attorney should be presented. The Examiner, from a prior telephone conversation with Applicants, is under the belief that Applicants are prosecuting this application *pro se*, that is to say, without the services of an attorney. If this is indeed the case, Applicants are advised that while an inventor may prosecute the application, lack of skill in this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skilled preparation and prosecution. The Office cannot aid in selecting an attorney or agent.

A listing of registered patent attorneys and agents is available on the USPTO Internet web site <http://www.uspto.gov> in the Site Index under "Attorney and Agent Roster." Applicants may also obtain a list of registered patent attorneys and agents located in their area by writing to the Mail Stop OED, Director of the U. S. Patent and Trademark Office, PO Box 1450, Alexandria, VA 22313-1450.

In the Final Rejection dated 10 January 2007, Applicants were apprised of the law surrounding product-by-process claims. The Examiner calls Applicants' attention to the Manual of Patent Examining Procedure (MPEP), Section 2113, reproduced below for Applicants' convenience:¹

2113 [R-1] Product-by-Process Claims

PRODUCT-BY-PROCESS CLAIMS ARE NOT LIMITED TO THE MANIPULATIONS OF THE RECITED STEPS, ONLY THE STRUCTURE IMPLIED BY THE STEPS

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.).

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., In re Garner, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)

ONCE A PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS FOUND AND A 35 U.S.C. 102 /103 REJECTION MADE, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE

¹ A copy of the MPEP is available online at <http://www.uspto.gov/web/offices/pac/mpep/mpep.htm>

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"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) (The claims were directed to a zeolite manufactured by mixing together various inorganic materials in solution and heating the resultant gel to form a crystalline metal silicate essentially free of alkali metal. The prior art described a process of making a zeolite which, after ion exchange to remove alkali metal, appeared to be "essentially free of alkali metal." The court upheld the rejection because the applicant had not come forward with any evidence that the prior art was not "essentially free of alkali metal" and therefore a different and unobvious product.).

Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989) (The prior art disclosed human nerve growth factor (b-NGF) isolated from human placental tissue. The claim was directed to b-NGF produced through genetic engineering techniques. The factor produced seemed to be substantially the same whether isolated from tissue or produced through genetic engineering. While the applicant questioned the purity of the prior art factor, no concrete evidence of an unobvious difference was presented. The Board stated that the dispositive issue is whether the claimed factor exhibits any unexpected properties compared with the factor disclosed by the prior art. The Board further stated that the applicant should have made some comparison between the two factors to establish unexpected properties since the materials appeared to be identical or only slightly different.).

THE USE OF 35 U.S.C. 102 /103 REJECTIONS FOR PRODUCT-BY-PROCESS CLAIMS HAS BEEN APPROVED BY THE COURTS

"[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products

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by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith.” In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

This section of the MPEP summarizes the Patent and Trademark Office’s policy surrounding product-by-process claims. The general rule has been underlined by the Examiner.

While the cases cited in the MPEP section quoted above provide “real-life examples” of this rule, it might be better understood by thinking about the goals of the patent system in the United States. Succinctly stated, the patent system rewards *disclosure* of new, useful and non-obvious processes, machines, manufactures, compositions of matter, and improvements thereon² with a limited monopoly. Suppose Inventor A is the first to invent a widget comprising two parts, X and Y. Further, assume that Inventor A’s process is very time consuming and expensive, but it is the only way known to make the widget. Inventor A writes about his widget in all of the relevant technical journals and even receives a patent for it. Now suppose Inventor B comes along 5 years later and invents a new way to make the widget, for example a different way of connecting X to Y. The widget still has two parts, X and Y. Even if Inventor B could make the widget at a fraction of the cost of Inventor A’s method, the Patent Office would properly reject Inventor B over the work of Inventor A if he or she tried to patent a widget having two parts (X and Y) made by the different process. Why? The widget comprising X and Y has already been *disclosed* to the public (and perhaps the Patent Office), and invention is defined by disclosure.³

Against that backdrop, Claim 10 is reproduced below:

10. (New) An apparatus having at least one carbon nanotube coupled to a nanostructure, **(limitation A)**

² See 35 U.S.C. 101

³ See 35 U.S.C. 102

wherein the nanotube is formed by: creating the nanostructure on a substrate; placing a catalyst in the nanostructure; and forming the carbon nanotube on the nanostructure. **(limitation B)**

Claim 10 presents an analogous situation to the hypothetical presented by the Examiner above. Here, Applicants are claiming an apparatus having a nanotube coupled to a nanostructure (i.e. "limitation A"). The nanotube is apparently formed or attached to the nanostructure by the process described in "limitation B." Limitation B uses *verbs* (i.e. "creating," "placing," and "forming"), and accordingly, this is a process limitation. Putting the two together yields a "product-by-process" claim. Thus, a proper anticipation (35 U.S.C. §102) rejection of Claim 10 will contain the structural elements of the claim, namely a carbon nanotube coupled to a "nanostructure." The same analysis applies to Claim 18. Arguments traversing rejections that identify a carbon nanotube coupled to a "nanostructure" on the grounds that the attaching of the nanotube to the "nanostructure" is accomplished in a different manner have no legal relevance.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicants have claimed the benefit of U.S. Provisional Application No. 60/102,159 (28 September 1998). Support for the independent claims of the instant application (Claims 10 and 18) can be found *inter alia* at page 10 of the provisional application. As such, Applicants will be accorded 28 September 1998 as their priority date.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The entire reference teaches each and every limitation of the rejected claims. The pinpoint citations provided are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found.

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For brevity's sake, the following remarks with respect to Claims 11-17 and 19-24 are being made once: These claims are being construed as not requiring anything more than what is recited in the preamble of Claims 10 and 18, namely a nanotube coupled to a nanostructure. To the extent the limitations found in the dependent claims recite intended uses, statements of intended use are not given patentable weight, and as such, all claims must be distinguished in terms of structure rather than function. *See In re Schreiber*, 128 F.3d 1473, 1477-78; 44 U.S.P.Q. 2d 1429, 1431-32 (Fed. Cir. 1997). To the extent the limitations of the dependent claims are meant to convey additional structural limitations, this should be made explicit, at which point the claims would likely be subject to a restriction requirement.

Claims 10-24 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 96/38705 to Baldeschwieler, et al. (California Institute of Technology).

With respect to Claims 10 and 18, Baldeschwieler discloses a carbon nanotube coupled to a nanostructure. *See generally* (Baldeschwieler 30: 1 *et seq.*) The nanotube is coupled to a tip/protrusion. *See* (Baldeschwieler "Fig. 6"). *See* above with respect to Claims 11-17 and 19-24.

Claims 10-24 are rejected under 35 U.S.C. 102(e) as being anticipated by US 5,824,470 to Baldeschwieler, et al. (hereinafter Baldeschwieler '470).

With respect to claims 10 and 18, Baldeschwieler discloses a carbon nanotube coupled to a nanostructure. *See generally* (Baldeschwieler '470 26: 54 *et seq.*) The nanotube is coupled to a tip/protrusion. *See* (Baldeschwieler '470 "Fig. 6"). *See* above with respect to Claims 11-17 and 19-24.

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Claims 10-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Dai, et al., *Nanotubes as nanoprobe in scanning probe microscopy*, Nature Vol. 384, 147-150 (14 November 1996).

With respect to Claims 10 and 18, Dai discloses a nanotube coupled to a nanostructure that is a tip or protrusion. *See generally* (Dai at 147, "Fig. 1"). See above with respect to Claims 11-17 and 19-24.

Claims 10-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Keller, *A nanotube molecular tool*, Nature Vol. 384, 111 (14 November 1996).

With respect to Claims 10 and 18, Dai discloses a nanotube coupled to a nanostructure that is a tip or protrusion. *See generally* (Keller "Figure"). See above with respect to Claims 11-17 and 19-24.

Claims 10-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Wong, et al., *Carbon Nanotube Tips: High-Resolution Probes for Imaging Biological Systems*, J. Am. Chem. Soc. 1998, 120, 603-604.

With respect to Claims 10 and 18, Wong discloses a nanotube coupled to a nanostructure that is a tip or protrusion. *See generally* (Wong at 603, "Fig. 1"). See above with respect to Claims 11-17 and 19-24.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 10-24 are rejected on the ground of nonstatutory double patenting over claim 1 of U. S. Patent No. 6,597,090 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: Claim 1 of US 6,597,090 is drawn to an array of carbon nanotubes. Claims 10 and 18 of the instant application recite an apparatus "having at least one carbon nanotube." The subject matter being claimed is fully disclosed, for example, at (Mancevski '090 "Fig. 3"). See above with respect to Claims 11-17 and 19-24.

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Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Applicant is advised that should claim 10 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Conclusion

Candidly speaking, Applicants stand in a crowded field, especially given the relative breadth with which the claims read. Applicants should be apprised that other references may exist that would qualify as 102(e) prior art – that is to say the work described in a journal article may in fact appear in a published application or patent. Every effort was made to find the earliest publication date, and to apply these references. Applicants may wish to view the extensive work done by the “Smalley group” at Rice University or the work of Charles Lieber at Harvard University.

The Examiner makes record of the following piece of prior art, regardless of its status as “prior art” under 35 U.S.C. §102:

1. Hafner, et al., *Growth of nanotubes for probe microscopy tips*, Nature Vol. 398, 761-762 (29 April 1999).
2. US 6,159,742 to Lieber, et al. (12 December 2000).
3. US 6,743,408 to Lieber, et al. (1 June 2004).

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All other references made of record but not relied upon for the rejections in this Office Action are considered pertinent to Applicants disclosure.

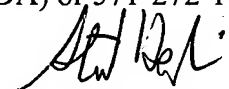
All amendments made in response to this Office Action must be accompanied by a pinpoint citation to the Specification (i.e. page and paragraph or line number) to indicate where Applicant is drawing their support.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel C. McCracken whose telephone number is (571) 272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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